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AGRICULTURAL NEWS LETTER

VOL. 14 - NO. 2 MARCH-APRIL, 1946

This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations of the du Pont Company and its subsidiary companies. It also contains published reports and direct contributions of investigators of agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.

DU PONT

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"KRENITE" WATER-SOLUBLE DINITRO DORMANT SPRAY CONTROLS INSECTS AND DISEASES ON ORCHARD CROPS, SMALL FRUITS, AND ORNAMENTALS

An effective liquid formulation for use as an insecticide or as a fungicide on certain orchard crops, small fruits, and ornamentals when the plants are dormant has been added to Du Pont's list of agricultural chemicals. This new product is "Krenite" water-soluble dinitro dormant spray, containing sodium dinitro-ortho-cresylate as its active ingredient.

The Du Pont Grasselli Chemicals Department recommends use of this compound, dissolved in water in the spray tank, for insect and disease control before any appreciable amount of green tissue shows, except in a few special cases.

"Krenite" is recommended for control of such insects as overwintering forms of rosy apple aphid, green apple aphid, grain aphid, black-cherry aphid, current aphid, snowball aphid, bud moth, oystershell scale, and pear psylla; and for such plant diseases as peach-leaf curl, spur blight (purple canespot) on raspberries, sooty blotch on pears, and apple scab. To control the latter disease, "Krenite" spray is applied in the spring to the orchard floor to reduce overwintering spores in the dead leaves on the ground.

Research Underway On Use of "Krenite" As Blossom Thinner

While "Krenite" has been used, under expert supervision, as a blossom-thinning chemical for apples and peaches, additional information is required because successful use for this purpose depends on accurate timing and a knowledge of such related factors as tree vigor, variety response, and local conditions.

NOTE: Leaflet giving detailed information and recommendations for use of "Krenite" water-soluble dinitro dormant spray will be sent upon request. Address Agricultural Chemicals Division, Grasselli Chemicals Dept., Du Pont Company, Wilmington 98, Delaware.

AMERICAN FARMERS AND RANCHERS WILL USE AIRPLANE FOR MANY SPECIALIZED AGRICULTURAL OPERATIONS AND TO TRANSPORT PERISHABLES TO DISTANT MARKETS

Effect Compared with Railroad, Automobile, and Combine

"Verily, the airplane promises to affect and sway farm life as much as did the railroad in the last half of the 19th Century and the automobile in the 20th Century."--Editorial in the "Carolina Cooperator."

"This matter of air transport for farm products may make greater changes in harvesting and marketing techniques than the combine did for grain."--Editorial in the "Prairie Farmer."

The airplane has many advantages for numerous specialized uses in agricultural production and in the marketing of many perishable farm crops.

It has already been used with encouraging success, particularly in large-scale operations, to broadcast seed, fertilizer, insecticides, fungicides, and hormone sprays such as "Parmone" pre-harvest fruit-drop inhibitor to apple and pear orchards; to aid in crop planting and seeding-down of pastures; to enable ranchers to ride the range to check cattle, sheep, fences, water holes and wells, and to shoot large numbers of predatory animals such as wolves and coyotes; for dispatch of machinery repair parts and replacements; to carry doctors, nurses, and medicines to the sick and the sick to hospitals; to fly grain and feed to isolated farms in cases of emergency such as floods and blizzards; and to develop new lands and rehabilitate old soils -- and this enumerates only a few.

Many specialists believe that "bombing" of crops with insecticides and fungicides will curtail and, in some cases, almost wipe out certain pests now costing farmers millions of dollars yearly through damage to plant life. They think airplane spraying and dusting of insect-breeding grounds, fields, and orchards is an ideal method of extermination, especially for large acreages and where ground application is difficult or impossible.

And, of course, the airplane offers tremendous possibilities in the transportation of perishable farm products to distant markets.

Continued on next page

Planes May Move Billion and Half Ton-Miles of Perishables Annually

One expert, L. H. Britten, director, Evans Transportation Research, says probably a billion and a half ton-miles of agricultural perishables will move to markets by air in this country annually.

A statement issued by the Air Transport Association points out that "already air delivery of certain varieties of produce to markets over long distances has proven feasible."

"Present-day plans of the airline," the Association says, "call for the encouragement of farmers in all sections of the country to raise vegetables and crops which heretofore in general have been confined within a radius of 100 to 200 miles of the market. For today there is a feeling abroad that distances may become secondary as a marketing factor."

Important Questions About Air Transportation Must Be Answered

Experiments in airborne transportation of farm products now underway will provide information on rates the airlines can afford to offer growers and rates growers can afford to pay; suitable types of planes; possible reduction of expense such as saving in ground-handling time; and determination of what manufactured products can be provided at the end of each flight to give the airlines a load factor of at least 75 per cent on the return trip.

Developments Bearing on Future Role of Aviation in Agriculture

One writer says the fact that aviation's role in the future of rural America is charged with tremendous possibilities is shown by recent developments. The United States Department of Agriculture estimated at least 3,000 postwar surplus planes may become air trucks to transport produce for the farmer. A survey indicated that about 60 per cent of personal planes sold in the immediate postwar period would go to residents of rural areas. The Civil Aeronautics Authority expressed the belief that pilot openings in aerial agriculture would overshadow opportunities offered wartime flyers as airplane pilots or civilian instructors.

Authorities Caution Against Over-Emphasis

Transportation authorities, however, caution against over-emphasis on air transportation of agricultural perishables. The so-called air candidates for the most part are considered to include those perishable commodities that have a relatively high intrinsic value, coupled with a relatively low density or weight per cubic foot, whose value to the consumer at destination can be materially enhanced by speed in transit.

Men of experience believe that perhaps one-tenth of our 19,500,000 tons of yearly traffic of fresh fruits and vegetables is about the total tonnage air freighters can anticipate within the next five to ten years.

Continued on next page

Tomato Plants Flown from Georgia for Planting In Northern States

For years plants ready for setting have been shipped by rail from the South to New Jersey and other northern tomato-growing areas. Last year plants, shipped by air express, were planted in the north a day after they were pulled and loaded in Georgia.

Western Farmers Use Planes to Hunt Predatory Coyotes That Kill Stock

One of three plane teams of pilots and gunners, hired by the State Game Commission to lower the coyote population of Oregon, gunned 194 coyotes in 60 hours and 20 minutes of flying. In a four-day aerial hunt farmers of Western Oklahoma bagged 231 coyotes. One western sheep raiser reports that he "could not stay in business but for this type of insurance."

Oklahoma Farmers Use Planes to Cover Long Distances on Large-Acreage Farms

Of the 26 planes that arrived at Stillwater during Flying Farmer's Day at Oklahoma A. and M. College, 18 were farmer flown, and two of these were piloted by farm wives. One flying farmer who owns three quarter sections in two counties makes the rounds of his farms once a week by plane. He is positive it is the quickest, cheapest -- and safest -- way to do the job. Another farmer commutes between his home farm of 2,800 acres of cotton and grain and his 1,000 acre range-land farm -- a distance of 60 miles -- by plane in only a few minutes.

Seeding of Stripped-Over Coal Land Too Rough for Mechanical Seeder

The low cost of seeding by plane was shown in the recent sowing of 10,000 pounds of grass seed in 26 hours by a small plane in Illinois on 1,200 acres of stripped-over coal land to be used for pasture. The plane, manned by a crew of five men including the pilot, sowed approximately 50 feet at one swath and carried 150 pounds of seed on each trip. The land was too rough for a mechanical seeder. If the seeding had been done by hand, local authorities estimated it would have cost nearly $6.00 per acre and a lot of man-hours of labor, as one man could sow only about one acre a day. The plane-seeding job, including cost of the seed, was done for $3,850 or a little under $3.21 an acre.

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Spinach and Lettuce Serve as "Guinea Pigs" for Tests With Low-Valued Farm Perishables

Stems, bad leaves, and sand were removed from spinach picked in Los Angeles in the morning, and the edible portions wrapped in cellophane packages and put aboard a plane for departure in the early afternoon. The fresh spinach was sold to housewives in eastern cities the next morning. Iceberg lettuce from the Salinas-Watsonville area of California, which enjoys a growing season of nearly eight months, was shipped to Detroit and marketed at 5 cents a head above railborne lettuce. The test indicated enough customers were willing to pay the premium to insure the sale of considerable airborne lettuce.

Michigan Fresh Fruits Reach Faraway Boston in Four Hours

At the height of the raspberry season around Benton Harbor, Mich., a C-39 plane took off with 18,000 pounds of dead-ripe fruit, consisting of 600 crates of blackcaps, 50 crates of pie cherries, and 50 crates of sweet cherries. Picked one morning, they were sold to consumers in Boston the next morning, after an easy four-hour hop at air-conditioned altitudes. As pointed out by Art Page of "Prairie Farmer," fruit can be left growing until it is ripe, and full of sugar and flavor. No long jolting haul, no worry about refrigerator cars, for the plane flies quickly into the low-temperature zone two or three miles in the air.

Spinach, Asparagus, Tomatoes, Pineapples, And Other Fresh Products Flown to Markets

A plane recently flew 5,000 pounds of spinach overnight from Burbank, Calif., to Cincinnati. Choice asparagus has been flown from California to New York, and early tomatoes from the Lower Rio Grande Valley of Texas to northern cities. Also, 6,000 pounds of pineapples were flown from Vera Cruz, Mexico, to San Francisco. Among numerous other products already shipped successfully by air are dates, fresh grapes, limes, hulled green peas, and beans.

Research Shows Improved Eating Quality and Nutritional Value of Picked-Ripe Products

In studies at Wayne University, tomatoes ripened in the field and flown to Detroit were compared with tomatoes from the same field harvested at the usual "mature green" stage and shipped through the usual channels. Tests of the vitamin C content reveal a ratio of approximately 25 to 14 in favor of the field-grown, vine-ripe, airborne tomatoes.

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DDT GOES TO WORK ON THE FARM

"From Du Pont's experience as a producer of DDT compositions for the armed forces come 'Deenate' DDT insecticides for agricultural use. Through Du Pont agricultural research and the cooperative work of governmental agencies, DDT now goes to work on the farm," says a new Du Pont leaflet, reviewed below. It adds: "DDT got its reputation as a new 'wonder product' because of the amazing job it did for the armed forces in controlling insect pests of human beings and animals. Experimental work during the war also proved that DDT would do an equally important job for farmers."

"DEENATE" IS FAMILY NAME OF DU PONT DDT INSECTICIDES FOR AGRICULTURE

DDT in its original or basic form is of little value as an insecticide. It is ineffective -- will not dissolve or disperse in water -- and cannot be ground fine enough to be used as a dust.

Before it could be used under farm conditions, research had to find a way to mix DDT with water for spraying, and to prepare it for use as a dust, as an oil emulsion, or as a solution in oil. Then the right combination had to be found for different uses. A DDT preparation that works perfectly for one purpose may not be at all satisfactory for another. In addition, proper concentrations had to be worked out for best results against particular pests.

To meet these varying needs, Du Pont agricultural chemists have produced a line of DDT insecticides made especially for use on the farm. They are known by the family name of "Deenate" DDT insecticides.

The Grasselli Chemicals Department of the Du Pont Company has issued a leaflet on "Deenate" DDT insecticides for agricultural use. It includes facts about DDT, gives recommendations on where and how to use "Deenate" for fruits, vegetables, cotton, farm buildings, livestock, stored grain, shade trees and ornamentals, and gives various precautions. These suggestions are based not only on Du Pont research but on various state experiment-station investigations, and on published work of the U. S. Department of Agriculture.

NOTE: Copy of leaflet on "Deenate" DDT insecticides will be sent upon request. Address Agricultural Chemicals Division, Grasselli Chemicals Department, Du Pont Company, Wilmington 98, Del.

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"EVERY LIVESTOCK MAN SHOULD KNOW ABOUT FOOT-AND-MOUTH DISEASE"

Why discuss foot-and-mouth disease at this late date when its complete eradication in this country has been an accomplished fact for more than 15 years?

Because, say Dr. J. R. Mohler and Dr. Jacob Traum, two authorities on the subject: "Every livestock man should know the facts about foot-and-mouth disease."

Interchange of Commodities Emphasizes Need for Sanitation

In addition, and this is of urgent importance according to recent statements by the U. S. Department of Agriculture, recent interchange of commodities between countries has emphasized anew the importance of the sanitary regulations which prohibit imports into the United States of both animals and commodities, including fresh meat, likely to carry the infection from countries where foot-and-mouth disease exists.

"The blisters and fever that are the signs of foot-and-mouth disease should be dreaded as the symptoms of smallpox among human beings," Mohler and Traum assert. "Unfortunately, there is no practical vaccination or cure for the animal malady, which spreads like wildfire and must be fought as quickly and effectively lest it become a conflagration."

They explain that extreme precautions to prevent its introduction, plus rigid measures to eradicate it in the event of outbreaks, "are accepted as necessary by the officials entrusted with the control and eradication of infectious diseases of animals, and they receive the full support of most livestock owners and the public in general." As a result, they say, the United States has enjoyed long intervals of freedom from this malady, and several of the outbreaks have been limited to only a few herds.

The U. S. Bureau of Animal Industry, in Research Achievement Sheet 29 (A), recently issued, says:

> "If through inadequate measures or lack of foresight, foot-and-mouth disease had been allowed to become established in the United States, its presence would probably cost this country fully $200,000,000 a year, judging from reliably reported losses that it causes abroad and the toll that less serious diseases take in our own country."

Continued on next page

U.S.D.A. "ALERTS" LIVESTOCK GROWERS AGAINST POSSIBLE OUTBREAK OF FOOT-AND-MOUTH DISEASE -- HAS EFFECTIVE CONTROL PROGRAM READY FOR ANY EMERGENCY

A common and somewhat prosaic chemical compound has played, and is ready again to play, an important part in protecting American livestock against the dread foot-and-mouth disease.

It is sodium hydroxide, more commonly known as caustic soda or ordinary lye. Use of this chemical disinfectant was one of the government's most effective means of eradicating the disease, which is characterized by the U.S. Department of Agriculture as "one of the world's most contagious and devasting livestock maladies."

The United States has repelled eight invasions of the foot-and-mouth disease, and since 1929 has been entirely free from it. However, this does not mean that the government and private veterinarians have relaxed in the slightest their continuing war against another outbreak that can -- and before 1929 did -- occur in spite of all precautions.

The government's program that eliminated the malady and that is being called to the attention of the livestock industry again at this time as a precautionary measure, consists in applying quarantine restrictions, slaughtering infected and exposed animals, burying or cremating the carcasses, and disinfecting the premises.

Sodium Hydroxide Highly Effective As Disinfectant for Affected Premises

"Disinfection with sodium hydroxide (caustic soda) in a 1% to 2% solution is highly effective for destroying virus remaining on the infected premises after the disposal of affected animals," according to Research Achievement Sheet 29 (A), issued by the Agricultural Research Administration of the U.S. Department of Agriculture.

And, despite the fact that no trace of the disease has been discovered in this country for more than 15 years, "veterinary officials keep constantly in touch with new scientific and practical dvelopments in the prevention and control of this disease," says the most recent U.S. Department of Agriculture Yearbook, "Keeping Livestock Healthy." This comprehensive presentation of the latest information on livestock health contains a long discussion of the foot-and-mouth disease by Dr. J. R. Mohler, former chief of the Bureau of Animal Industry, and Dr. Jacob Traum, professor of veterinary science at the University of California.

U.S. Scientists Stress Importance of Precautions by Livestock Growers

These scientists stress the precautionary attitude among veterinarians and livestock growers in this country. They say: "In the last outbreak in the United States in 1929, a 1½% solution of sodium hydroxide

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was extensively used as a disinfectant. The effectiveness of this simple common chemical had been established a few years before by the Department of Agriculture's Foot-and-Mouth Disease Commission."

Practically All Cloven-Footed Animals Susceptible -- Man Fairly Resistant

Practically all cloven-footed animals, especially cattle, hogs, and sheep, are susceptible. In malignant form, it may kill or render valueless fully half the animals in a herd. The disease also permanently impairs the productivity of animals less severely affected. Active virus may occur in the meat, blood, lymph, saliva, milk and other parts or secretions of the body. Man is fairly resistant to the infection, but sometimes acquires it. He may also carry the virus or infective agent on his clothing. Infection has been traced most commonly to affected animals, their fresh meat, milk, and offal, unsterilized garbage, and other contaminated products.

While the Commission's research showed definitely that the slaughter method of eradication is best for the United States, it found that "disinfection with sodium hydroxide is essential to destroy virus remaining on the premises."

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COMPATIBILITY OF DDT-"FERMATE" MIXTURES

Recent reports have been spread indicating that DDT loses its insecticidal efficiency if used with "Fermate" fungicide. Attempts to run down these statements have failed to uncover any basis of proof for them. In fact, available information points to the contrary. Extensive field trials on fruit and vegetable crops by our research staff and by other investigators have shown no loss of efficiency of either DDT or "Fermate" when they are used in combination.

These reports of incompatibility may have originated as a result of statements made in the paper by Fleck and Haller (Jour. Ind. and Eng. Chem. 37; 415, 1945) to the effect that iron oxide and iron chloride are catalysts for the decomposition of DDT at temperatures of 115 to 120°C. The statement was also made that only .05 mole of HCl was evolved when "Fermate" was heated with DDT at the above high temperatures. In contrast with this, a number of widely used materials, including supplements and Bordeaux and sulfur fungicides, showed more decomposition of DDT than did "Fermate," some liberating as much as 1 mole of HCl. Judging from the results given by Fleck and Haller, there is no justification for concluding that "Fermate" and DDT are not compatible at the temperatures of practical use. In fact "Fermate" appears to be more compatible than many other materials used with DDT.

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EXPERIMENT STATIONS IN TOBACCO-GROWING SECTIONS RECOMMENDED "FERMATE" FUNGICIDE TO CONTROL BLUE MOLD (DOWNY MILDEW) IN TOBACCO SEEDBEDS

"Fermate" Gives Good Results With Both Bright and Shade Tobacco

"Extensive tests of 'Fermate' fungicide by experiment station investigators and tobacco growers in both the bright and shade tobacco areas show it is an outstanding protective fungicide for controlling tobacco blue mold -- an annual hazard in the production of tobacco plants.....Apply 'Fermate' spray or dust directly to the young tobacco plants or dust through the seedbed cloth, making the first application when leaves are about the size of a dime, or when blue mold first appears in the vicinity.....In those areas where permanent beds are employed, 'Fermate' dusts applied through the normal seedbed covering have been equally as effective as those applied directly to the plants.....Continue applications twice weekly until transplanting time. Repeat any application washed off by rain within 24 hours. 'Fermate' dusts are best applied when plants are wet with dew." ---Excerpts from new Du Pont leaflet, "Prevent Tobacco Blue Mold With 'Fermate' Fungicide," copy of which will be sent upon request. Address Agricultural Chemicals Division, Grasselli Chemicals Department, Du Pont Company, Wilmington 98, Del.

Applying the old adage, "a stitch in time saves nine," growers can now use an inexpensive chemical treatment to protect their young tobacco plants against blue mold before this dread fungous disease strikes, rather than attempt a control after it appears in the seedbed.

This preventive measure can be assured through proper application of "Fermate" fungicide, containing ferric dimethyl dithiocarbamate, developed by research scientists in the Du Pont Pest Control Research Laboratory.

During the past two war years, this new fungicide has been used for large-scale evaluation by growers and experiment station workers under actual farming conditions with exceptionally good results. Experiment station and extension workers throughout the tobacco-growing areas of the country have issued favorable reports regarding the efficacy of this chemical control of blue mold, which is also known as downy mildew, in tobacco seedbeds.

For instance, the VIRGINIA Agricultural Extension Service recently reported: "'Fermate' is effective in controlling blue mold; but, to be

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worthwhile, the sprays must start before the disease makes its appearance." It adds the treatment should be continued at intervals until danger of disease is passed. For Virginia, it recommends starting treatment about April 20, "or when you first hear of blue mold in the State."

The Extension Service in MARYLAND recommends using the new protectant a week before the disease is expected, and continuing with two spray applications a week until the plants are set, adding that the chemical "will not injure young plants."

The GEORGIA Coastal Plain Experiment Station at Tifton has just issued Mimeograph Paper No. 7, which says this new material "is the cheapest spray material tested, and one of the easiest and simplest to use. It is also the safest spray on small seedlings, and is the only effective material that does not stunt small tobacco plants when used during cold weather."

A report from the North FLORIDA Experiment Station says that the new spray has given good results for the last two seasons, "and was cheaper, safer, and more convenient to use than copper-oxide spray." The dust treatment required about twice as much as the spray treatment, "but it cost much less to apply." This Station recommends beginning dust applications when the largest leaves are about the size of a dime "or sooner if blue mold appears in the vicinity."

While both NORTH CAROLINA and SOUTH CAROLINA authorities recommend use of "Fermate" for tobacco blue mold, the North Carolina Station advises that its recommendations will be set forth in a leaflet to be published by the U.S. Department of Agriculture. This bulletin includes much of the data obtained from North Carolina tests in the past years. The Pee Dee Agricultural Experiment Station at Florence, S. C., advises that, following two years of favorable experimental results, "Fermate" will be recommended in both dust and spray forms. The Station reports that "several years work at the Station and test with growers show that by careful and regular treatments the disease can be stopped. Dusting is more easily and quickly done, and when directions are carefully followed it is just as effective as other methods of control. The dust is made with one of the new organic fungicides, 'Fermate.'" It gives suggestions for mixing with clay powders such as Fuller's Earth or talc.

The CONNECTICUT Agricultural Experiment Station has been recommending "Fermate" for several years. Research workers there have published results of their extensive tests in that Station's Bulletin 478, in which they state that a large number of growers have sprayed their beds with "Fermate" with uniformly satisfactory results when the chemical was properly applied.

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ONE SEED DISINFECTANT FOR SEVEN GRAIN CROPS

New Improved "Ceresan" (ethyl mercury phosphate) seed disinfectant destroys certain seed-borne diseases of wheat, oats, barley, rye, sorghums, millets, and flax, either by direct contact with the spores (germs), or by forming a vapor which penetrates every crack and cranny of the seed.

This organic mercury dust can be applied when convenient -- to well-cured grain seed 6 to 8 months before planting (except sorghums, 2 to 4 weeks), and stored in a dry, well-ventilated place.

By generally controlling certain seed-borne and soil-borne diseases, it frequently improves stands and increases yields from 6 to 18 per cent at a cost of approximately 2½ cents per bushel of seed grain or flax. A quart or two of seed pays for the disinfectant for an acre.

New Improved "Ceresan" is recommended for the following:

Wheat: Seed-borne stinking smut (not loose smut). Reduces seedling blights and root-rot.

Oats: Both loose and covered smuts. Reduces seedling blight and root-rot.

Barley: Seed-borne stripe disease, covered and black (not brown) loose smuts. Reduces seedling blights.

Rye: Stinking and stem smuts. Reduces scab seedling blight.

Sorghums: Both loose and covered kernel smuts.

Millets: Smut of foxtail millet and proso (hog or broomcorn millets).

Flax: Reduces damping-off and seed decay.

NOTE: The foregoing is part of the information contained in a leaflet, "Better Grain Yields with New Improved 'Ceresan'," copy of which will be sent on request to the Semesan Division, Du Pont Co., Wilmington 98, Delaware.

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SORGHUM SEED TREATMENT CONTROLS SMUT, SEED DECAY, AND MOLD ON SEED

Much of the tremendous loss from smut and seed decay, which greatly reduce yields of sorghum grain and hay for livestock feed, can be eliminated by proper use of seed disinfectants and protectants.

As pointed out by Dr. W. F. Buchholtz, plant pathologist, in South Dakota Experiment Station Circular No. 51, "Sorghum Seed Treatment":

"Covering the seed with a mold-killing dust before planting has a threefold effect.

"1. It controls smut. Smutted heads develop only on plants grown from seed infected during germination by smut carried on the seed. By killing the seed-borne smut, seed treatment prevents infection and insures a stand of smut-free plants.

"2. It prevents seed decay by molds in cold, wet soil. Sorghum stands often fail in South Dakota when the seed lie in cold, wet soil during unseasonably cold weather.

"3. It kills molds on the seed. These molds usually develop during storage. Moldy seed is less likely than clean seed to produce a satisfactory stand."

Dr. Buchholtz reports results of his experiments with three seed-treating materials, including New Improved "Ceresan" fungicide and New Improved "Semesan" Jr. fungicide. He states that his tests show that "there is very little smut" in sorghum grown from treated seed. He points out that the effectiveness of the three preparations for smut control was evident in a test at Brookings, results of which show "there was a much smaller percentage of smutted heads in sorghum from treated than from untreated seed." In fact, he found that sorghum grown from untreated seed had 24 per cent smutted heads in grain sorghum and 20 per cent in forage sorghum, while treated seed grew sorghum with only minute traces or no smutted heads at all in either grain or forage sorghum.

The South Dakota circular concludes that the only smut control necessary is the killing of the smut spores adhering to the seed, and that treating the seed with the proper chemicals will do the job.

It says that ethyl mercuric phosphate, 5 per cent, at the rate of ½ ounce of dust per bushel, "is the most common seed treatment for small grains and is sold under the trade-mark New Improved 'Ceresan'." He adds that ethyl mercuric phosphate, 1 per cent, at 2 ounces per bushel, "is a common corn seed treatment which is sold under the trade-mark New Improved 'Semesan'."

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GOLDEN EGG AWARDED TO DU PONT BY NEW JERSEY STATE POULTRY ASSOCIATION FOR DEVELOPMENT OF "DELSTEROL" "D"-ACTIVATED ANIMAL STEROL (VITAMIN D)

A golden egg for distinguished service to the poultry industry was recently awarded to the Du Pont Company by the New Jersey State Poultry Association. The award was made for the company's development of "Delsterol" "D"-activated animal sterol (vitamin D), which was produced in adequate quantities for the poultry industry's vitamin D requirements during the war.

The award was accepted by Dr. James Waddell, who, in the Biological Laboratory of Du Pont's Fine Chemicals Division at New Brunswick, N. J., conducted the research underlying the practical production of "Delsterol" for use in poultry feeds. The trophy was presented on behalf of the Association by Dr. Walter C. Russell, professor of biochemistry at Rutgers University, New Brunswick, who pointed out that Dr. Waddell had demonstrated that exposure of animal provitamin to ultraviolet irradiation produced a vitamin D which is effective for poultry.

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FORMALDEHYDE FOR CONTROL OF CHICK BRONCHITIS

"Chick bronchitis may appear in the brooder houses, battery rooms, hatcheries, or any place where a large population of chicks is present," according to a recent issue of "Poultry Tribune." The article continues:

"This disease is caused by a different virus than that which causes infectious laryngotracheitis in older birds. It is thought that it usually gains entrance to the hatchery or brooder house by transfer of the virus on egg cases, egg shells, or by the introduction of infected chicks.

"In any room or brooder house where this disease appears, the use of an inhalant spray will help check the disease, but it usually will run its course, and other than the inhalant spray, there doesn't seem to be any effective remedy.

"In cleaning up a brooder house or battery room in which there have been chicks with this disease, it is necessary to remove all birds, thoroughly clean the room, and fumigate, using 40 cubic centimeters of formalin and 20 grams of potassium permanganate for each 100 cubic feet of room space. A temperature of at least 70 degrees should be maintained, with as high a moisture content as possible. This can be obtained by wetting the floors down with hot water and closing the room up tightly.

"The formalin should be poured over the potassium permanganate crystals in an earthenware vessel. The room should be closed from four to six hours after fumigation, and no infected chicks, or equipment that has been used around the infected chicks, should be introduced into the room again."

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USE OF DDT ON WHITEWASHED SURFACES

Fresh whitewash is likely to be sufficiently alkaline to decompose DDT. DDT should therefore not be mixed with whitewash or applied over freshly whitewashed surfaces.

It may be applied over old whitewash which has largely lost its alkalinity. Any decomposition of the DDT under these conditions will be very slow, and its efficiency can be maintained by applications at shorter intervals, if needed.

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SUPPLEMENTARY STEPS TO TAKE WHEN USING CHLORINE FOR DAIRY EQUIPMENT

Three supplementary steps should be taken by dairymen who use chlorine compounds as chemical agents to sterilize dairy cans and utensils. So says Dr. F. E. Nelson, Iowa State College dairy bacteriologist, who reminds dairymen that use of the chemical alone it not enough to free utensils completely of bacteria, yeast and mold organisms.

Dr. Nelson points out that the first precaution is to make sure the cans and utensils are physically clean. He says: "The best way to do the cleaning is to rinse the surfaces to be treated with cold water as soon as the milk has been removed. The surfaces then should be washed thoroughly with warm water and a good non-soap washing powder. A good brush helps. The utensils should be rinsed thoroughly to remove all traces of the washing powder before they are treated with the chlorine solution."

The Iowa bacteriologist says the second precaution is to make sure the solution is the right strength. "This will vary with the type of chemical used, but the manufacturer's directions should be followed exactly," he says. "Too much chemical is wasteful, and too little gives a solution ineffective in killing the organisms."

Dr. Nelson adds that with the right solution of the right strength, the killing power depends on the length of time the utensils are treated. "With most solutions it will take from 10 to 30 seconds -- longer if the solution is a little weak and shorter if a stronger solution is used," he says. After the utensils have been treated, Dr. Nelson recommends they be drained and allowed to dry immediately.

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Agricultural News Letter (Du Pont)
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MILKING TIME FOR HERD OF SIXTEEN COWS CUT FROM 55 TO 30 MINUTES

Cows henceforth can be milked in about half the time formerly required.

This remarkable saving in the time and labor is accomplished by use of the so-called fast-milking method developed by Dr. W. E. Peterson of the Dairy Department at University Farm, St. Paul, Minn.

Milk flow is stimulated by massaging and washing the udder and teats with chlorinated water at 120 to 130 degrees, and then starting to milk within 45 to 60 seconds thereafter. Careful milking by this method also eliminates the need for the bothersome chore of stripping.

Chlorine Used As Disinfectant

The chlorine is put into the water "so that udder and teats are thoroughly cleaned and disinfected when washed, thus making for the production of cleaner milk," according to "The Farmer," Vol. 68, No. 14, which features the story of a practical farm demonstration of the new method.

The article says the time required to milk a herd of 16 good Holsteins on the farm of Fred J. Liefield, in Dakota County, Minn., has been reduced from 55 to 30 minutes by adoption of the new procedure.

Mr. Liefield's 18-year-old son George, who does the milking, started fast milking more than a year ago. Young George is so enthusiastic about fast milking that he gave a demonstration at the Dakota County Fair, and won a trip to the State Fair where he was awarded a blue ribbon.

Milk Now Grade "A Plus"

The milk produced by the Liefield herd formerly graded "A" regularly on the Twin City Market. Now nearly all of it is "A plus," a rating that requires extreme care to insure sanitation in every step of milk production.

The Liefields, just to make sure the fast-milking method was really responsible for the stepped-up pace in milking, tried the old way for a couple of days and discovered it took almost twice as long. The article quotes George as saying: "From now on, this herd will always be milked by the fast method."

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U.S.D.A. TEST SHOWS RECOMMENDED DOSAGE OF PHENOTHIAZINE NONTOXIC TO CATTLE

"Phenothiazine can be presumed to be physiologically nontoxic to cattle when given in the dosage recommended by the U. S. Bureau of Animal Industry," according to George E. Cauthen of the Bureau's Regional Animal Disease Laboratory at Auburn, Alabama.

Reporting results of tests on 12 calves on normal diet, in the "Journal of the American Veterinary Association," Vol. CVII, No. 821, Mr. Cauthen says: "Phenothiazine has been widely used as an anthelmintic for the removal of gastrointestinal nematodes from cattle, as well as from other classes of livestock, and the results generally have been satisfactory. A few reports have come to our attention, however, in which unfavorable reactions in cattle were attributed to the use of this drug, one reporting temporary blindness, and another reporting anemia and death in poor and weakened animals. These and other reports have discouraged some veterinarians from using phenothiazine or from administering sufficiently large doses to achieve the best results."

While the recommended dosage of phenothiazine is 20 grams per 100 pounds bodyweight, with a maximum of 60 grams per animal, Mr. Cauthen mentions records of the administration of larger doses without untoward effect. His own studies, on 14 calves, were made to test the tolerance of cattle to relatively large doses. Since other workers had observed that horses given phenothiazine while on a diet of Johnson grass hay developed anemia more readily than when fed a more complete diet of oats and alfalfa, Mr. Cauthen placed two of his calves on white corn and Johnson grass hay in order to be able to observe the possible effect of deficient diet on cattle treated with phenothiazine. The other 12 calves received ground grain and alfalfa hay.

Results of the Tests by Bureau of Animal Industry

Mr. Cauthen outlines the results of the tests in the accompanying table. Mr. Cauthen says:

"Table 1 gives the ages, weights, and dosages of phenothiazine that were given to the animals receiving ground grain and alfalfa. These animals had been used for experimental infection in a project on the study of gastrointestinal nematodes of cattle at this laboratory. The large doses of phenothiazine were given primarily to remove Cooperia species in order that the host animals might be used for experimental infection with other species of nematode parasites. In most cases, the animals were passing relatively few ova and were in good condition. The results of medication of calves 553, 564, and 542 are to be included in a study of the effect of small daily doses on the development of parasitic nematodes, to be reported elsewhere."

Continued on next page

TABLE 1 -- Toxicologic Data on Calves Treated with Phenothiazine While on Normal Diet (Ground Grain and Alfalfa Hay)

Calf	Age Mos.	Weight Lb.	Phenothiazine Administered: Daily Dose in Gm.	Days Dosed	Total Dose in Gm.	Results
413	6	160	100	1	100	Not toxic
401	7½	260	250	1	250	Toxic**
414	9	250	70	2	140	Not toxic
484	5	220	100	2	200	Not toxic
355	12	320	95	3	285	Not toxic
495	7	213	100	3	300	Not toxic
432	7	185	23	6	138	Not toxic
484*	6	240	10	10	100	Not toxic
414*	9½	260	10	10	100	Not toxic
512	7½	202	10	17	170	Not toxic
553	4	185	8	56		Not toxic
564	4	155	8	54		Not toxic
555	5	192	8	55		Not toxic
542	6½	205	8	54		Not toxic

*Second course of treatment. **See text.

"Only calf 401 showed indications of toxic effects. This calf was 7½ months old, weighed 260 lb., and was given a single dose of 250 Gm. of phenothiazine. The following day, it was off feed and unsteady in movements. The second day, it had improved and was eating, and the third day, it appeared normal," Mr. Cauthen's report continues.

"In the test to determine if a diet of white corn and Johnson grass would affect the tolerance of cattle to phenothiazine, two nine-month-old calves, weighing 185 lb. (337) and 255 lb. (338), were changed from the regular ration of ground grain and alfalfa hay to a ration of Johnson grass hay supplemented by ground white corn to the amount of 0.25 per cent of the animal's body weight, daily. After being fed this ration for 46 days, calf 337 weighed 182 lb., and was given 36 Gm. of phenothiazine; calf 338 weighed 264 lb., and was given 52 Gm. of phenothiazine, in accordance with the recommended dosages for animals of their respective weights. The animals remained apparently normal and their hematocrit readings, before and after treatment, showed no detectable differences."

Discussion and Conclusions

"The 12 calves listed in Table 1 were not comparable to calves and yearlings suffering from gastrointestinal helminths. However, the ability of these animals to tolerate the large doses suggest that phenothiazine can be presumed to be physiologically nontoxic to cattle when given in the dosage recommended. Two calves fed for 46 days on ground white corn and Johnson grass hay did not develop anemia following treatment with phenothiazine at the recommended rate of dosage."

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DITCH DYNAMITING TO GET RID OF SURFACE WATER GROWING IN POPULARITY

"In order to get into fields last spring farmers resorted to all sorts of mechanical ditching devices, most of them homemade. Some worked well, others were failures, and as the work of ditching has gone on, dynamiting has been gaining steadily in popularity. This is especially true where ditches of up to 160 rods are necessary and where the soil is saturated with moisture, or where it is under several inches of water."--"The Farmer."

After the charge of dynamite was set off, a head of water rushed down the ditch, cleaning as it moved. And instead of appearing as if the water was receding from the field, it appeared as if the surface of the field was rising, exposing good black soil which soon dried enough for seedbed preparation.

That's the way "The Farmer" describes the results of a blast of 525 pounds of dynamite used to make a ditch a quarter of a mile long, 5 feet wide at the top, four at the bottom, and 3 feet deep on excellent land of the Lester Wold farm near Wahpeton, North Dakota.

"It drained a 75-acre field that had been covered by water since early spring," says the legend under a couple of pictures showing the actual dynamiting and the resulting ditch. "After the blast there came the fast-flowing stream of water that cleaned ditch bottom and sides."

The article points out that for several years, drainage has been the chief farming problem in many Red River Valley communities both on the Minnesota and North Dakota sides of the river. It adds: "In some places the natural slope of the land is only a little more than a foot per mile, so even a ridge a foot or two high may flood many hundred of acres."

Dynamite Does Its Best Work In Wet Soil

"Dynamite does its best work in wet soil," the item continues. "Such soil holds together better than dry soil, and enables the gases created by the explosion to lift more dirt."

Discussing the blasting on the Wold farm further, the article explains that the course of the ditch to be blasted was surveyed by an engineer of the Soil Conservation Service.

"The survey determined both the course of the ditch and the slope," it adds. "Then the dynamite charge was set to conform. In this instance, one-half pound sticks were set a foot apart except where there was a slight rise and there the amount was increased by a third or doubled."

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